

FEASIBILITY OF RAPID THERMAL MOCVD GROWTH FOR FABRICATION OF InP-BASED HETEROSTRUCTURES

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Abstract

Semiconductor lasers require the growth of an “active” multi-layer heterostructure, a subsequent definition of the lateral waveguide feature and re-growth of a burying semi-insulating layer. Here we demonstrate a feasibility of Rapid Thermal Metal Organic Chemical Vapor Deposition (RT-MOCVD) approach as a way to carry out of the various processes associated with the integrated manufacturing of InP-based laser devices:- In-situ cleaning and preservation of the InP substrates; III-V semiconductor layer deposition; Growth of the quantum well structures; Selective growth of InP and InGaAs using an ion implanted mask-less definition for the selective epitaxy; In situ Rapid Thermal Annealing of the ion implanted damaged area ; Re-growth of InP:Fe semi-insulating burying layer on the primary “masked surface”.